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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/942,521	08/29/2001	David W. Minsek	102162-200	9626

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WIGGIN & DANA LLP
ATTENTION: PATENT DOCKETING
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EXAMINER

HAMILTON, CYNTHIA

ART UNIT	PAPER NUMBER
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1752

DATE MAILED: 08/26/2003

5

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicant(s)

09/942,521

Applicant(s)

MINSEK ET AL.

Examiner

Cynthia Hamilton

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 May 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 11-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7-10 is/are rejected.
- 7) ☒ Claim(s) 6 is/are objected to.
- 8) ☒ Claim(s) 1-20 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

1. Newly submitted claims 11-20 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

2. Inventions I (original claims 1-4 and new claims 5-10 drawn to a composition classified in class 430, subclass 280.1) and II (newly submitted claims 11-20 drawn to a process of photoimaging classified in class 430, subclass 326) are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)).

In the instant case product as claimed can be used as an electronic part encapsulant wherein overall cure occurs without need for development or the composition could be used in a stereolithographic process wherein there is no need for a development step.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper. The examiner notes that process applications are examined in another art unit than that where examination of the compositions occurs. Thus, the PTO recognizes the art to be so different as to split the process area from the composition area with respect to examination expertise.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 11-20 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

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3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 7-10 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicants give as support for these claims that "New claims 7-10 claim narrower preferred compositions embodiments of the present invention." The examiner states for the record that claims 7-10 are not narrower in all aspects that the originally presented claims 1-4. The epoxy resin of claims 7-10 is not limited to an epoxidized polyfunctional bisphenol A formaldehyde novolak resin as is the composition of claims 1-6. Applicant has not pointed out where the new claim is supported, nor does there appear to be a written description of the claim limitation of a generic "an epoxy resin having an average of about eight epoxy groups and having an average molecular weight of 1400 gram/mole and having an epoxy equivalent weight of about 215 gram/mole". What is supported is an epoxidized polyfunctional bisphenol A formaldehyde novolak resin having an average of about eight epoxy groups and having an average molecular weight of 1400 gram/mole and having an epoxy equivalent weight of about 215 gram/mole. No where has the examiner found in the original claims or specification is found a broader epoxy resin than an epoxidized polyfunctional bisphenol A formaldehyde

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novolak resin. Thus, there is no indication that the generic scope of the composition now claimed by applicants in claims 7-10 was in their possession at the time of filing of this application.

6. Claim 5 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicant has not pointed out where claim 5 is supported, nor does there appear to be a written description of the claim limitation of "gamma-butyrolactone". What is supported is "gamma-butyrolactone on page 8, line 14.

7. Claims 1-4, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Janke et al (5,726,216) in view of applicants' disclosure of well know prior art on page 2 of their specification and Schrader (4,474,929) and Gelorme et al (4,882,245). Janke et al teaches the instant composition with the exception of specifically combining the listed epoxidized polyfunctional bisphenol A formaldehyde novolak resin more specifically SU -8, with the polyol more specifically Tone 0301, 0305 or 0310 polycaprolactone polyol reactive diluent and with the triaryl sulfonium hexafluoroantimonate salt Cyracure UV I-6974 and not setting forth the use of a solvent for all three of the above components. However, Janke et al does teach as do applicants that radiation cured epoxy resins incorporating cationic photoinitiators tend to be very brittle. Schrader supports this point with respect to SU-8 in particular in his col. 1 disclosure so supports Janke et al specifically in regard to SU-8 resins. Gelorme et al in their examples also report the brittle nature of SU-8 photoresists. Gelorme addresses the problem by using other

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epoxies as reactive diluents to reduce the brittle nature of the SU -8 resin. In Gelorme, see particularly column 4 and examples. Janke et al are concerned with a broad group of epoxy resins including the same SU-8 epoxidized polyfunctional bisphenol A formaldehyde novolak resin which is applicant's sole concern. Janke et al's solution is broader than that of applicants in that they believe what was needed was a means by which radiation cured cationic epoxies can be toughened and still retain the good thermal and mechanical properties of the original composition. They do that by teaching the incorporation of toughening with the epoxy resin initiator mixture. These toughening agents include thermoplastics, hydroxy-containing thermoplastic oligomers, epoxy-containing thermoplastic oligomers, reactive flexibilizers, elastomers, rubbers, and mixtures thereof. Incorporation of one or more of these toughening agents has resulted in increases in toughness of more than 230% over that of the untoughened epoxy resin according to Janke et al. Thus, with respect to instant claims 1-4, and 7, the use of any of the epoxy resins of Janke et al listed inclusive of epoxidized polyfunctional bisphenol A formaldehyde novolak resin with known photoinitiators as listed such as the triaryl sulfonium hexafluoroantimonate salt Cyracure UV I-6974 mixed with any of the flexibilizers of Janke et al found compatible would have been prima facie obvious to obtain a less brittle cured epoxy composition. The use of a non reactive diluent such as acetone to improve processability such as for forming solvent based prepegs as set forth on the top of col. 7 in Janke et al makes obvious the use of solvents with the Janke et al compositions where it is needed. In Janke et al, see particularly the Abstract, col. 1, lines 15-21, col. 2, lines 35-55, col. 3, lines 40 to col. 4, lines 47, col. 5, lines 32-33, col. 6, lines 46-col. 7, lines 28, col. 8, lines 1-30, lines 62 to col. 9, lines 20 and lines 56-61, col. 10, lines 11-24, col. 14, lines 30-59. Thus, the prior art teaches adding the

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caprolactone, E-caprolactone triol, which is listed as toughener or flexibilizer starting in col. 8 and ending in col. 9, line 61, to epoxy resins for the same reason applicants add them to their epoxy resin compositions. The ranges of percentage of the toughener of Janke et al to epoxy resin is found in Tables 1-3 to be from 5 to 30 weight %. Thus, workers of ordinary skill in the epoxy art would recognize that the SU-8 resins would be mixed with a flexibilizer in the same general amount to obtain a tougher cured coating as set forth by Janke et al. Applicants on page 2 of their specification make clear all but the use of the polyol with respect to the thick film resists using SU-8 is known. The addition of a flexibilizer as taught by Janke et al to reduce the known brittle nature of the epoxy resin would have been prima facie obvious as well.

8. Applicant's arguments filed May 22, 2003 have been fully considered but they are not persuasive. Applicants argue Janke et al does not teach adding a separate solvent to dissolve the above-noted three ingredients or any specific suggestions for combining the four presently claimed components. The examiner disagrees and as rewritten the rejection to emphasize Janke et al teachings to the addition of non reactive diluent such as acetone being added to solvent based systems such as prepeg compositions. Thus, Janke et al does teach the use of a solvent in their compositions when needed for the end use. Thus, a four component system is taught. Applicants argue that the examiner has not pointed out why it is obvious "to select the specific claimed polyfunctional bisphenol A formaldehyde novolak resin along with the specific claimed caprolactone polyol reactive diluent out of the great multitude of possible combinations of compounds mentioned in Janke et al" and that the examiner "never provides any reason why it would be obvious to select these particular classes of compounds and then combine them." They then state "Janek et al or the other references certainly offers no reason to do so. It thus appears

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that the Examiner is attempting improper hindsight or obvious-to-try reasoning by this rejection."

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170

USPQ 209 (CCPA 1971). In response to applicant's argument that the examiner "never provides any reason why it would be obvious to select these particular classes of compounds and then combine them", the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Janke et al gives the reason to combine every listed example of epoxy resin with every listed example of flexibilizer in his disclosure and that reason is to provide a radiation cured material with improved toughness. The prior art recognizes the specific epoxies in question have a problem of toughness, i.e. they are very brittle when cured. The examiner presented facts supporting this finding and applicants agreed with it. Janke et al addresses this problem generally with the addition of their flexibilizers, i.e. component (C). This is the same problem addressed by applicants when they seek to reduce the brittle nature of their cured SU-8 coatings. Thus, the citation of specific species by Janke et al is held sufficient for their choice to

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be improved by the flexibilizers given. Janke et al teaches the reason it is obvious to try their flexibilizers and the prior art teaches that the specific epoxy resin in question has the problem solved by Janke et al. Thus, the rejection is maintained.

9. Claim 6 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. Claim 5 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

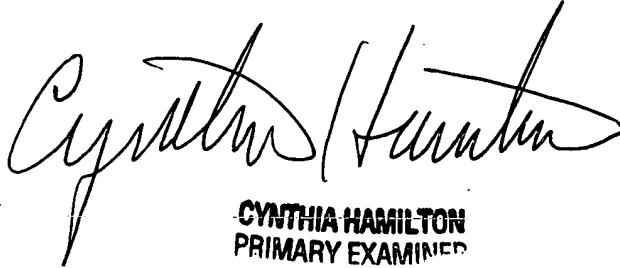
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Primary Examiner Cynthia Hamilton whose telephone number is (703) 308-3626. The examiner can normally be reached on Monday-Friday, 9:30 am to 5:00 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Janet Baxter can be reached on (703) 308-2303. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application should be directed to the 1700 receptionist whose telephone number is (703) 308-0661.

Cynthia Hamilton
August 25, 2003



CYNTHIA HAMILTON
PRIMARY EXAMINER